

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

Claims 1-50 (canceled).

51. (currently amended) A storage system comprising:

a plurality of disk drives for corresponding to a plurality of fibre channel interface first paths;

a controller to be coupled to a network for receiving data from an information unit coupled to said network and transferring data to said disk drives;

an information unit interface, included in said controller, for receiving data from said information unit via said network;

a disk drive interface, included in said controller, for transferring data sent from said information unit to said disk drives; and

a switch coupled to said controller by at least one of first-second paths;

wherein said switch is further coupled to each said disk drive drives by one of said fibre channel interface first paths, thereby forming a point-to-point connection between said switch and said each disk drive;

wherein the number of said at least one of first-second paths is less than the number of said fibre channel interface first paths;

wherein said disk drives store data sent from said information unit through said switch and each of said disk drives has an identification (ID)

number; and

wherein said switch conducts switching between said first and said second paths by transfers ~~transferring~~ data to a selected disk drive among said disk drives by one of said ~~fibre-channel interface~~ first paths based on receiving data from said disk drive interface.

52. (previously presented) The storage system according to claim 51, wherein said switch dynamically switches between said disk drives.

53. (previously presented) The storage system according to claim 51, wherein said controller generates a parity data from data sent from said information unit, and

wherein at least one of said disk drives stores said parity data.

54. (previously presented) The storage system according to claim 51, wherein said controller generates a parity data from data sent from said information unit, and

wherein some disk drives of said disk drives are stored data without said parity data.

55. (previously presented) The storage system according to claim 51, wherein at least one of said disk drives are spare disk drives, said spare disk drives storing data from another disk drive of said disk drives.

56. (currently amended) The storage system according to claim 51, wherein a first one of said disk drives is capable of communicating with said switch independently of a ~~fibre channel interface~~first path associated with a second one of said disk drives.

57. (currently amended) The storage system according to claim 51, wherein said ~~at least one of first~~second paths are fibre channel interface paths.

58. (currently amended) A storage system comprising:

- a plurality of disk drives for corresponding to a plurality of ~~fibre channel interface~~first paths;
- a controller to be coupled to a network for receiving data from an information unit coupled to said network; and
- a switch coupled to said controller by at least one of ~~first~~second paths;

wherein said switch is further coupled to each ~~said~~ disk drives by one of said ~~fibre channel interface~~first paths, thereby forming a point-to-point connection between said switch and said each disk drive;

wherein the number of said at least one of first paths is less than the number of said ~~fibre channel interface~~first paths;

wherein said disk drives store data sent from said information unit through said switch, and each of said disk drives has an identification (ID) number; and

wherein said switch conducts switching between said first and said second paths by transfers-transferring data to at least one of disk drives among said disk drives by at least one of said ~~fibre-channel interface~~first paths based on information of said ID number of said at least one of disk drives.

59. (currently amended) The storage system according to claim 58, wherein said storage system has a plurality of said switches, each plurality of switches coupled to said controller by each of said ~~at least one of first~~second paths.

60. (previously presented) The storage system according to claim 58, wherein said switch dynamically switches between said disk drives.

61. (previously presented) The storage system according to claim 58, wherein said controller generates a parity data from data sent from said information unit, and wherein at least one of said disk drives store said parity data.

62. (previously presented) The storage system according to claim 58, wherein said controller generates a parity data from data sent from said information unit, and wherein some disk drives of said disk drives store data without said parity data.

63. (previously presented) The storage system according to claim 58, wherein at least one of said disk drives are spare disk drives, said spare disk drives storing data from another disk drive of said disk drives.

64. (currently amended) The storage system according to claim 58, wherein a first one of said disk drives is capable of communicating with said switch independently of a ~~fibre channel interface~~first path associated with a second one of said disk drives.

65. (currently amended) The storage system according to claim 58, wherein said ~~at least one of first~~second paths are fibre channel interface paths.

66. (currently amended) A storage system comprising:

- a plurality of disk drives for corresponding to a plurality of ~~fibre channel interface~~first paths;
- a controller to be coupled to a network for receiving data from an information unit coupled to said network; and
- a switch coupled to said controller by at least one of ~~first~~second paths;

wherein said switch is further coupled to ~~each~~said disk drives by one of a plurality of first ~~said fibre channel interface~~ paths;

wherein the number of said at least one of second ~~first~~ paths is less

than the number of said first ~~fibre channel interface~~ paths;

wherein said disk drives store data sent from said information unit through said switch and each of said disk drives has an identification (ID) number; and

wherein said switch receives data from said controller and transfers data independently to individual ones of said disk drives over individual ones of said ~~fibre channel interface~~first paths.

67. (currently amended) The storage system according to claim 66, wherein said storage system has a plurality of said switches, each plurality of switches coupled to said controller by each of said ~~at least one of first~~second paths.

68. (previously presented) The storage system according to claim 66, wherein said switch dynamically switches between said disk drives.

69. (previously presented) The storage system according to claim 66, wherein said controller generates a parity data from data sent from said information unit, and

wherein at least one of said disk drives store said parity data.

70. (previously presented) The storage system according to claim 66, wherein said controller generates a parity data from data sent from said information unit, and

wherein some disk drives of said disk drives store data without said parity data.

71. (previously presented) The storage system according to claim 66, wherein at least one of said disk drives are spare disk drives, said spare disk drives storing data from another disk drive of said disk drives.

72. (currently amended) The storage system according to claim 66, wherein a first one of said disk drives is capable of communicating with said switch independently of a ~~fibre-channel interface~~first path associated with a second one of said disk drives.

73. (currently amended) The storage system according to claim 66, wherein said ~~at least one of first~~second paths are fibre channel interface paths.

74. (currently amended) A storage system comprising:
a plurality of disk drives for storing data sent from external of said storage system; and

a switch; being coupled to each of said disk drives via one of a plurality of loops, thereby forming a point-to-point connection between said switch and said each disk drive and coupled to a controller via one or more paths, said controller controlling to-transfer of data,

wherein said switch selects ~~for selecting~~ a disk drive from said disk drives and transfers ~~transferring~~ data sent from external of said storage system to the selected one of said disk drives via a first loop,

wherein said disk drives, being coupled to said switch by a plurality of first fibre channel arbitrated loops ~~loops~~, and ~~said disk drives~~ each have an identification (ID) number,

wherein the number of said one or more ~~one or more~~ paths between said controller and said switch is less than the number of said ~~fibre channel arbitrated~~ first loops ~~loops~~, and

wherein said switch transfers said data sent from external of said storage system to a destination disk drive by one of said ~~fibre channel arbitrated~~ first loops ~~loops~~, and

wherein said switch dynamically switches between said disk drives.

75. (currently amended) The storage system according to claim 74, wherein said storage system has a plurality of said switches, each of said plurality of switches being coupled to said controller by one of said one or more ~~each of said one or more~~ paths.

76. (cancelled)

77. (previously presented) The storage system according to claim 74, wherein said controller generates a parity data from said data sent from external of said storage system, and

wherein at least one of said disk drives store said parity data.

78. (previously presented) The storage system according to claim 74, wherein said controller generates a parity data from said data sent from external of said storage system, and

wherein some disk drives of said plurality of disk drives store data without said parity data.

79. (previously presented) The storage system according to claim 74, wherein at least one of said disk drives are spare disk drives, said spare disk drives storing data from another disk drive of said disk drives.

80. (currently amended) The storage system according to claim 74, wherein a first one of said disk drives is capable of communicating with said switch independently of a ~~fibre channel arbitrated~~first loop associated with a second one of said disk drive.

81. (currently amended) The storage system according to claim 74, wherein said one or more paths are a fibre channel ~~arbitrated~~interface bus-loops.

82. (currently amended) A storage system comprising:
a plurality of disk drives for storing data sent from external of said storage system; and

a switch, being coupled to each of said disk drives via one of a plurality of loops, thereby forming a point-to-point connection between said switch and said each disk drive and coupled to a controller via one or more paths, said controller controlling to transfer of data, for transferring data sent from external of said storage system to said disk drives,

wherein said disk drives ~~coupled to said switch forms a fibre channel first loop and said disk drives~~each have an identification (ID) number,

wherein the number of said one or more paths between said controller and said switch is less than the number of loops ~~paths~~ between said switch and said disk drives, and

wherein said switch transfers said data sent from external of said storage system to a destination disk drive of said disk drives by one of said loops ~~paths~~ between said switch and said destination disk drive, and

wherein said switch dynamically switches between said disk drives.

83. (previously presented) The storage system according to claim 82, wherein said storage system has a plurality of said switches, each of said plurality of switches being coupled to said controller by each one of said one or more paths.

84. (cancelled)

85. (previously presented) The storage system according to claim 82, wherein said controller generates a parity data from said data sent from external of said storage system, and

wherein at least one of said disk drives store said parity data.

86. (previously presented) The storage system according to claim 82, wherein said controller generates a parity data from said data sent from external of said storage system, and

wherein some disk drives of said disk drives store data without said parity data.

87. (previously presented) The storage system according to claim 82, wherein at least one of said disk drives are spare disk drives, said spare disk drives storing data from another disk drive of said disk drives.

88. (previously presented) The storage system according to claim 82, wherein a first one of said disk drives is capable of communicating with said switch independently of path associated with a second one of said disk drives.